

Two other records on *Cuculus pallidus* are worth noting, but on both occasions the host concerned was the Little Wattle-bird (*Anthochaera chrysoptera*). A distance of some ten yards separated these nests and in both cases the nest was found to contain a Pallid Cuckoo's egg, but only one nest contained an egg of *Anthochaera chrysoptera*. Later the other nest was observed to contain, additionally, an egg of *Anthochaera chrysoptera*, and since the last-named species lays a single egg in Western Australia, it was apparent that the Cuckoo did not remove the host's egg. It may be also interesting to note that both cuckoo eggs were exactly similar (a darker zone marked on the larger end), and it was assumed the same cuckoo hen deposited both eggs. Perhaps this has little significance, but it may mean that only some cuckoos possess the instinctive desire to remove an egg of the host.

Previously I stated the opinion that *Cuculus pallidus* would, on most occasions, deposit its eggs before the host laid any eggs. Glancing through my records, it is evident that this would predominantly apply except whenever it appears that the cuckoo removed one of the eggs. The reason may be as follows. It is a well established fact that the cuckoo chick will eject the host's chicks or eggs and to do this it must be strong enough to meet these demands. So, the cuckoo lays its egg first. This induces the host to commence incubation at an earlier stage and perhaps before it has laid its own clutch, and finally the cuckoo chick hatches a little earlier than the host's chick. The result is that the cuckoo is much stronger than the host's chicks and so is able to eject them from the nest. However, when the cuckoo deposits its egg after the host has laid its eggs, the cuckoo removes an egg, which situation will result in easing the demands later on the young cuckoo chick.

Hence, in conclusion, it can be assumed that *Cuculus pallidus* will remove an egg of the host wherever the host's clutch has already been laid, and time permits the complete transaction. Referring back to nest D it will be seen that all the eggs of both species were broken. This was most probably due to the cuckoo having insufficient time for the transaction and one of the wattle-birds may have observed the cuckoo at the nest.

HERPETOLOGICAL MISCELLANEA

By L. GLAUERT, W.A. Museum, Perth.

V.—WESTERN AUSTRALIAN GECKOES, PART 1

The lizards of the Family Geckonidae are easily distinguished. They have no overlapping scales on the back, and are usually velvety in appearance and soft and flabby to the touch.

All the Australian forms have well developed, functional limbs with five digits; the body is more or less depressed and the tail may assume a variety of shapes according to the species. This appendage is easily shed and substituted by a replacement, usually differing in colour and outline from the lost portion.

Because Geckoes are nocturnal bright colours are rarely present, except in some species of *Nephurus*.

The classification here adopted is mainly based upon the characters of the digits, which are persistent within the genus. Only in the case of *Nephurus* has the tail been used as a means of identification.

KEY TO GENERA

- a.—Tail terminating in a distinct knob *Nephurus*
- aa.—Tail without terminal knob, pointed.
- b.—Digits simple with non-traetile claws.
- c.—Digits straight.
- d.—Digits granular below, rostral and mental plates projecting, nail-like; no other labials *Rhynchoedura*
- dd.—Digits with overlapping scales below, rostral and mental not nail-like; labials normal *Lucasius*
- ee.—Digits angularly bent at the tip.
- e.—Claw sheath overlapping below *Gymnodactylus*
- ee.—Claw sheath split to the base *Icteronota*
- bb.—Digits dilated at the tip with retractile claws.
- f.—All the digits with claws.
- g.—Digits dilated at the tip only.
- h.—The distal expansion above covered with scales similar to those of the basal part *Phyllodactylus*
- hh.—The distal expansion above covered with scales different from those of the part *Diplodactylus*
- gg.—Digits dilated at the base and tip.
- i.—Distal lamellae paired *Oedura*
- ii.—Proximal lamellae paired *Oedurcula*
- ff.—Inner digits clawless *Peropus*

GENUS *Nephurus*

Head large and triangular, very distinct from the neck; eyes large; ear-opening long; body short; limbs slender, digits short, clawed, cylindrical. Tail more or less flattened, heart- or leaf-shaped, terminating in a knob. Usually found on the ground under stones or logs. Three species are known.

KEY TO SPECIES

- a.—Smooth conical tubercles scattered among the granules on the back, sides and tail *lacvis*
- aa.—Tubercles on the back surrounded by a ring of enlarged granules.
- b.—Tubercles on the back and tail, sharply spinose *asper*
- bb.—Tubercles on the back and tail, conical not spinose ... *wheelcri*

Nephurus asper Guenther

Head, body, limbs and tail finely granular with numerous distinct rosettes of larger conical granules surrounding a spinose

tubercles on the back, limbs and tail; absent on the head and under surface. Grows to about 5 in.

Colour: Said to be "Brownish above with many of the tubercles white; faint indications of whitish transverse lines on the back. Head with wide-meshed network of blackish lines, lower parts whitish". The single specimen in the Museum is old and very faded.

Distribution: In Western Australia known only from the Kimberley Division.

Nephrurus laevis De Vis

Head, body, limbs and tail finely granular with numerous rosettes of conical tubercles surrounded by a ring of granules no larger than those covering the rest of the body, scattered over the back and arranged in lines across the upper surface of the tail, at the sides many of these sharply pointed. Lower surface more or less finely granular with a few rounded tubercles on the chin. Grows to about 5 in.

Colour: In the original description De Vis states: "above light brownish-grey, a pale band across the occiput, a second across the nape, a third, very angular, across the shoulders, the former two enclosing a crescent, the latter, a triangle". These markings are present on the specimens in the Museum collection but the body markings vary geographically as follows:

(1) Those from Denham and north to De Grey Station have a dark patch on the sacral region and a dark tail.

(2) From Lander Station on the Gaseoyne and inland south to Coweewong Lake, the specimens show a distinct dark vertebral stripe on which the tubercles are white — a specimen from Jibberding, when alive, had the trunk light salmon orange, the legs more yellowish, the head greyish and the cross-bands, vertebral stripe and tail chestnut.

(3) Specimens from coastal localities, from Cardabia Station in the north to Yuna and Mullewa in the south, have the body more or less uniform with numerous white tubercles, the sacral region and the tail, above being somewhat darker with transverse rows of white tubercles. Colour sketches made from life show that the ground colours may vary from neutral grey to orange-einnamon and a combination of colours too complicated to describe. In every case, the under parts and the inner sides of the limbs are whitish. The third colour form may eventually prove to be distinct from the others.

Nephrurus wheeleri Loveridge

Head, back, limbs and tail finely granular with rings of enlarged granules surrounding a large conical tubercle, scattered over the head, neck, back and tail. On the limbs, the granules surrounding the central tubercle are not enlarged. It grows to about 5 in.

Colour: A living specimen from Austin Downs Station near Cue was vinaceous pink with mikado-brown eyelids, a broad cross-band over the shoulders, another on the sacral region extending on to the hind limbs, a third on the base of the tail and a terminal area including the bulb-like extremity. The fore-limbs are vinaceous pink and the under surface whitish.

Distribution: In Western Australia known from the interior of the North-West, from the Forteseue in the north to Sandstone in the south from where the range extends into Central Australia.

GENUS *Rhynchoedura*

Digits, cylindrical, clawed, covered with uniform small granules. Scales on the body uniformly granular, largest on the tail. Two preanal pores.

Rhynchoedura ornata Guenther

Head resembling that of a young bird, high, the snout pointed and beak-like. Body elongate, limbs rather long, digits slender, clawed, granular, granules smaller than those on the back. Tail cylindrical, tapering, covered above with granules larger than those on the body. Scales on the under surface smallest on the throat, largest on the tail and near the vent. Length up to $3\frac{1}{2}$ in.

Colour: Light greyish brown above with faint whitish spots, extending on to the limbs and tail. A blackish recurved band across the occiput and more or less regular dark festoons along the sides and extending on to the tail.

Distribution: In Western Australia known from the Fitzroy River in the north to Yalgoo and Gnows Nest in the south, inland to Laverton and Central Australia.

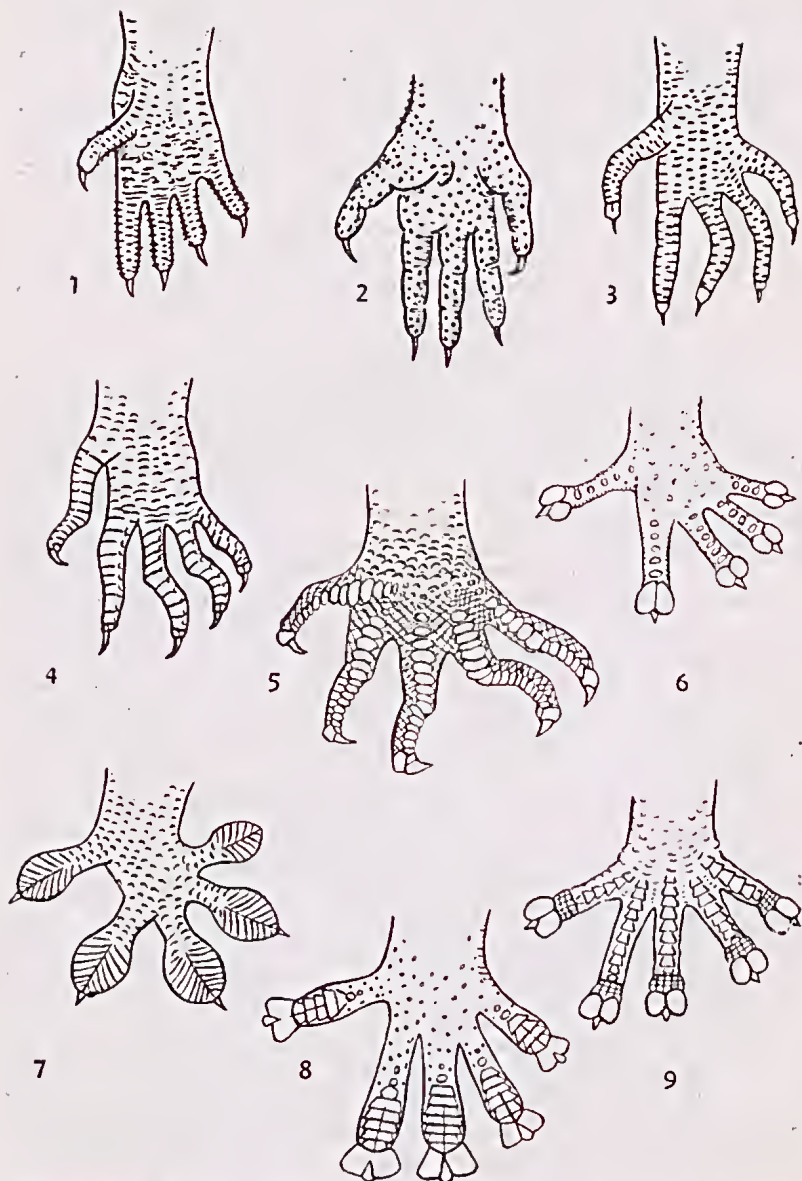
GENUS *Lucasius*

Digits cylindrical, covered above with slightly overlapping scales, and on the sides and under surface with small spine-like tubercles. The claws beneath a nail-like scale and surrounded at the sides and below by a rosette of small spine-like tubercles. Tail with squarish imbricate scales. Grows to $3\frac{1}{2}$ in. This gecko is not represented in the collection; the descriptions are extracted from literature.

Lucasius damaeus (Lucas and Frost)

"Head large, snout obtusely pointed, body slightly depressed; limbs moderate, digits long, tail long and slender, tapering to a point. Rostral and mental normal, eleven upper and eleven lower labials."

Colour: "Pale whitish grey above, darkest on the sides, a brownish, more or less broken band from the snout along each side of the back to the tail; a broad whitish vertebral band from the neck on to the tail. Head spotted and reticulated with dark brown, sides with two longitudinal series of roundish white spots; limbs and under surface uniform whitish."



Characters of the digits in Geckoes: 1. *Lucasius damacus*, 2. *Nephrurus laevis*, 3. *Rhynchoedura ornata*, 4. *Heteronota binoci*, 5. *Gymnodactylus milii*, 6. *Diplodactylus vittatus*, 7. *Peropus variegatus*, 8. *Oedura marmorata*, 9. *Phyllodactylus marmoratus*.

—O. Seymour del., after Walte.

Distribution: A Central Australian form ranging into Queensland, Western New South Wales and northern South Australia. Two specimens in the Australian Museum are said to come from near Perth, but are probably from the Eastern Goldfields.

Remarks: This species can be distinguished from the preceding by the shape of the head, the presence of labials, both upper and lower, and the spine-like tubercles on the digits.

GENUS *Gymnodactylus*

Digits clawed, compressed and angularly bent at the tip, with transverse plates below. The scales forming the lower claw sheath overlap.

Gymnodactylus milii (Bory)

Barking Lizard

Head triangular, flattened, distinct from the neck; body depressed; limbs short, tail constricted at the base, flattened, more or less leaf-shaped, terminating in a point. The whole of the upper surface, including the limbs covered with fine granules, larger on the snout, tail, elbows and knees of the limbs, intermixed with conical tubercles, usually white and arranged in irregular rows across the body and tail. Rostral much wider than high, labials numerous, mental much larger than the adjacent shields. Under surface granular; the granules smallest on the chin, largest and flattened on the abdomen. Grows to about 6 in.

Colour: Dark brown or chocolate brown, a white cross-band often present on the occiput and another on the shoulders. Most of the conical tubercles white; the under surface whitish. Replacing tail often peppered with rusty.

Distribution: Widely distributed south of the Kimberley Division. Present on many islands off the coast.

GENUS *Heteronota*

Digits clawed, with a row of plates below, claw between three enlarged scales, those on the lower surface not overlapping. Body covered with granules and tubercles, the latter arranged in longitudinal rows. Males with from 4 to 7 preanal pores and a group of two or three enlarged blunt tubercles at the side of the vent.

Heteronota binocci Gray

Bynoe's Gecko

Head oviform, somewhat flattened, body rather short. Moderately depressed, limbs normal, digits long and slender, snout covered with larger granules, rostral squarish, twice as wide as high, divided above, seven or eight upper and six or seven lower labials; mental large, pentagonal, two large chin shields forming a suture behind the mental. Tail long cylindrical, tapering to a point, not constricted at the base. The enlarged tubercles in bands across the upper surface; below with a series of enlarged transverse plates.

Colour: Light brown above with a number of dark cross-bands, some in pairs enclosing a narrower pale band, the tubercles may be light or dark; lower surface whitish.

Distribution: Very widespread from the north to the south of the State but absent from the higher rainfall area of the South-west. Not known to occur near Perth.

GENUS *Phyllodactylus*

Digits dilated at the tip, with two large plates below; the expanded portion above with scales differing from those covering the basal part, with a row of transverse plates below. Upper surface covered with uniform granular scales. Under surface with larger scales slightly imbricate. Two species are known to occur in Western Australia.

KEY TO SPECIES

- Scales granular, smooth, smaller, transverse lamellae
under the toes, extend from side to side, larger ... *marmoratus*
Scales faintly keeled, larger, three series of tubercles
under the toes, the central series more dilated; size
smaller *ocellatus*

Phyllodactylus marmoratus (Gray)

Marbled Gecko

Head oviform, much longer than wide, snout rounded, body rather elongate, limbs normal, the expansion rounded; upper surface covered with uniform granules, largest on the snout, arranged in rings round the tail; abdominal scales larger, smooth, imbricate. Grows to about 5 in.

Colour: Greyish brown or reddish brown above with darker marbling; under surface whitish.

Distribution: Very wide-spread, common in the South-west, ranging as far north as Carnarvon and inland to Kalgoorlie and eastward to South Australia.

Phyllodactylus ocellatus (Gray)

White-spotted Gecko

Head oviform, rather narrower than in the preceding, limbs and body similar; scales on the head and back granular, slightly keeled, larger than in the other species. Larger smooth rounded overlapping scales on the under surface, larger near the vent, arranged in rings around the tail. Grows to about 2 in.

Colour: Greyish brown or olive brown, marbled with darker; a distinct paler dorso-lateral band extending from the snout through the eye to the tail. This may break up into a series of pale spots in which case a pale vertebral stripe may be discernible. The under surface is whitish with a few dark spots.

Distribution: There are specimens in the British Museum from north-west Australia, Champion Bay and Houtman's Abrolhos, but material in the W.A. Museum was obtained at Kojonup, Ongerup and Ravensthorpe.

GENUS *Oedura*

Digits elawed, broad and with a raised terminal joint on which is a disc-like expansion with two large plates below, separated by a groove into which the claw can be withdrawn, the under surface of the digits with paired lamellae except basally. Upper surface covered with uniform scales.

KEY TO SPECIES

- a.—Dorsal scales flat, about as large as the ventrals *marmorata*
- aa.—Dorsal scales small, convex, granular.
 - b.—Habit slender, tail cylindrical *rhombifera*
 - bb.—Habit stout, tail flattened *robusta*

Oedura marmorata (Gray)

Head large, much depressed oviform; body elongate, depressed limbs moderate, digits strongly dilated, about as wide as the terminal expansion, four or five divided lamellae followed by several smaller individual ones under the middle toe. Head covered with uniform flat scales, rostral twice as wide as high, ten or eleven upper labials, mental triangular, shorter than the adjacent labials of which there are nine or ten. Back covered with flat, round scales larger than those on the occiput, in transverse rows, smaller on the flank, ventrals as large as the dorsals. Males with preanal pores and clusters of enlarged tubercles at the base of the tail. Tail thick, not constricted at the base, tapering to a point, covered with rows of squarish scales much larger than those on the body. Grows to 6 in.

Colour: Head dark speckled with white, body dark brown above with irregular whitish cross-bands enclosing a narrow slightly darker stripe and white spots. Limbs pale brown with white spots. On the tail the cross-bands are more regular and form rings round the appendage. Under surface of head and body whitish.

Young examples are banded black and white on the body, the bands forming rings round the tail. Head rusty brown with a white band on the upper lip extending backwards above the ear and forming the white cross-band on the nape. Under surface of head and body whitish; limbs rusty brown above.

Distribution: The types were collected at Port Essington by John Gilbert. The specimens in the W.A. Museum were obtained near Yalgoo and Gullewa.

Oedura rhombifera Gray

Lozenge-spotted Gecko

Head large, oviform, much depressed, body elongate, slender, depressed. Limbs moderate, two or three divided lamellae under the fourth toe followed by three or four smaller undivided ones. Rostral rectangular, twice as wide as high, grooved above, ten or eleven upper and the same number of lower labials; mental angular, not longer than the adjacent labials which are separated

by two or three enlarged granules. Upper surface covered with granules largest on the snout, under surface, granular in the gular region, hexagonal, flat and smooth on the abdomen where they are imbricate. Preanal pores present in the male. Tail slender cylindrical, covered with rings of squarish or hexagonal scales, tapering to a point. Grows to 4 in.

Colour: Pale brown with a zigzag darker brown line on each side, more or less forming a series of pale rhombic spots along the centre of the back, tail similarly marked; under surface whitish.

Distribution: In Western Australia known from the Kimberley Division and La Grange Bay.

Oedura robusta Blnger.

Boulenger's Gecko

Head oviform depressed, snout longer than the distance from the eye to the ear; rather stout, limbs moderate, digits with basal dilation less than the apical, three or four divided lamellae under the fourth toe. Upper surface covered with granular scales largest on the snout and tail, rostral almost pentagonal, grooved above about twice as wide as high, nostril pierced between the rostral, first labial and four nasals the upper two the largest and not in contact; separated by two or three granules. Ten or eleven upper and as many lower labials, mental small, triangular, shorter than the first lower labials which are separated by an enlarged zygous scale. Under surface with small granular scales in the gular region which gradually pass into large, flat imbricate scales on the abdomen. Six to eight preanal pores, a single enlarged tubercle at each side of the base of the tail. Tail depressed, oval in section, tapering to a point. The width four and a half to five times in the length. Grows to 5 in.

Colour: Light brown with a wide lateral stripe of dark brown from the tip of the snout, through the eye and over the ear to the tip of the tail; there may be a faint more or less incomplete dark vertebral line from the head to the tip of the tail. Head with irregular markings. Limbs variegated light and dark brown; under side of the body and tail and insides of the limbs whitish.

Distribution: Known in Western Australia from the Eastern Goldfields, Dedari, Northam, Spence's Brook and Kulin.

GENUS *Oedurella*

Digits free, clawed, dilated, furnished below with two apical plates separated by a longitudinal groove, with transverse lamellae on the fourth toe, the three distal emarginate in front, extending from side to side, the two proximal smaller, divided. Digits granular above, head, body, and tail above uniformly granular larger on the snout and tail, smallest on the occiput, ventral scales similar, becoming imbricate on the abdomen. Tail with rings of subequal rounded granules. Pupil vertical.

Oedurella taeniata Lonnb. and Anders.

Head oviform, twice as long as wide, somewhat depressed, ear-opening small, slit-like; body normal, limbs long and slender; digits short, dilated, as wide as the apical expansion; head covered with granular scales largest on the snout; rostral pentagonal, divided by a groove; nostril pierced between the rostral, first labial and three or four nasals, the upper the largest, separated from its fellow by two granules; ten or eleven upper labials, eleven lower, mental small triangular, not larger than the adjacent labials which are separated from one another by two scales. ("The two small prickles at the posterior margin of the eye" present on the type, are missing.) Back covered with uniform, smooth granular scales, laterally the scales are smaller, under surface granular, the granules becoming flatter and imbricate on the abdomen. Tail slightly depressed, about as long as the body. Length about 3 in.

Colour: Whitish in spirits with five brown stripes, the first vertebral stripe extends from the variegated head in the direction of the tail. The broad dorso-lateral stripes extend from the snout through the eye above the ear along the back to the tip of the tail. Fainter lateral stripes commence behind the eye pass over the shoulder along the flank and on to the tail. The limbs appear to be dark but the under surface is whitish. The faint and narrow yellowish stripes referred to in the original description, are absent on the Museum specimen.

Distribution: The type locality is Broome, the only specimen now in the Museum was obtained on the De Grey Station, where other Kimberley forms are also known to occur.

This gecko is very close to *Diplodactylus michaelsoni* Werner and when more specimens of both are available may prove to be identical with it.

GENUS *Peropus*

Digits strongly dilated, free at the base, below with undivided or divided transverse lamellae, distal phalanges free, compressed, clawed, raised from within the extremity of the dilation, inner digit clawless. Upper surfaces with granular scales, belly with eyeloid imbricated scales. Males with preanal pores. Grows to about 6 in.

One species with three sub-species.

Peropus variegatus (D. & B.)

KEY TO SUB-SPECIES

- a.—Digital lamellae undivided *australis*
- aa.—Digital lamellae divided.
 - b.—Upper surface russet brown with transverse rows of silvery and yellowish spots *punctatus*
 - bb.—Upper surface brown variegated with darker, sometimes dark with light blotches *variegatus*

Peropus variegatus variegatus (Dum. & Bibr.)

Dtella

Head longer than wide, snout longer than the distance from the eye to the ear opening, a depression between the eyes extending on to the snout, ear opening sub-oval, fairly large. Body and limbs moderately elongate, depressed. Digits short, lamellae under the expansion chevron-shaped divided by a median groove. Upper surface chin and throat covered with small granular scales, larger on the snout and abdomen. Rostral quadrangular, much wider than high, with median cleft above, seven to nine upper labials, six to eight lower; mental large, triangular, much larger than the adjacent labials, three pairs of chin shields, the inner much the largest, outer very small, ten to sixteen preanal pores; tail depressed, tapering, upper surface with transverse rows of granular scales, under surface with larger flat scales and a much transversely dilated median row.

Colour: Greyish or brownish variegated with darker, sometimes with distinct white spots or irregular markings. Under surface whitish.

Distribution: Very widespread south of the Kimberley Division reaching the south coast, inland to central and South Australia. Not rare near Perth.

Peropus variegatus australis Gray

This form is very similar to the preceding, the only difference being that the chevron-shaped lamellae under the digital expansion are not divided.

Distribution: The type was collected at Port Essington. As far as is known its range in Western Australia is restricted to the Kimberley Division.

Peropus variegatus punctatus Fry

Spotted Dtella

This Dtella differs from the typical form in its colouration only, having the normal divided lamellae under the digital expansion.

Colour: The original description states: "Upper surface russet brown, lighter on the snout with transverse rows of silvery and yellowish spots. The spots are more abundant on the limbs. Black spots may be distributed all over the dorsal surface or they may be confined to two rows, one on each side of the vertebral column, between the rows of lighter spots. Sometimes two faint streaks of brown on the loreal region, the upper continuing behind the eye to above the ear-opening". Spirit specimens in the W.A. Museum are all paler, the background being vinaceous buff or avellaneous (Ridgway).

Distribution: The type locality is Strelley River; other records are La Grange Bay, Lyndon River, Dalgarranga Station, and the Yalgoo district.

(Part 2 will deal with the Genus *Diplodactylus*)